



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,857	05/17/2006	Sylke Klein	MERCK-3161	8090
23599 7590 05/01/2009 MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201				
EXAMINER				
MAL NGOC LAN THI				
ART UNIT		PAPER NUMBER		
1793				
NOTIFICATION DATE		DELIVERY MODE		
05/01/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@mwzb.com

Office Action Summary

Application No.

10/579,857

Applicant(s)

KLEIN ET AL.

Examiner

NGOCLAN T. MAI

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 13-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-893)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 5/17/06

DETAILED ACTION

1. Applicant's election with traverse of group I in the reply filed on January is acknowledged. The traversal is on the ground(s) that PCT rule 13.2 as embodied in 37 C.F.R. 1.475 mandates keeping the claims of group I, a paste, to group II a cell and method of making a cell and group III drawn to a circuit and method of making a circuit together. This is not found persuasive because the inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 since, under PCT Rule 13.2, they lack the same or corresponding special technical features for the reasons stated in previous action, i.e., claim 1 is either obvious or anticipated by Ross.

The requirement is still deemed proper and is therefore made FINAL.

2. Accordingly, claims 1-12 are under examination and claims 13-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on January 16, 2009.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1 and 4-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Ross (U.S. Patent No. 4,293,451).**

Ross discloses an ink composition for deposition upon the surface of a semiconductor device to provide a contact area for connection to external circuitry. The ink composition (column 3, lines 33-37) comprises a metal powder, a fluxing agent, a binder, and a vehicle such as an organic solvent (column 4 lines 8-9). Ross teaches the fluxing agent is preferably of a type tending to dissociates oxides such as silicon dioxide to help insure better electrical and mechanical contact to the semiconductor device (column 4, lines 32-36). The dissociation of silicon dioxide by fluxing agent is an etching process, the fluxing agent therefore acts as an etching agent as recited in the instant claim.

In reference to claim 4, the fluxing or etching agent has removal activity of oxidation layers on the surface of the metal powders (column 4, lines 32-36).

In reference to claim 5, Ross teaches the if the contacts is to be formed on a solar cell which normally carries an anti-reflective coating in its, the ink may deposited and fired after the anti-reflective coating is deposited and the fluxing agent will dissolve the anti-reflective layer in the area where the ink is deposited over such a layer (column 6, lines 44-52).

Concerning claim 6, the anti-reflective coating is SiO_2 , therefore the fluxing agent has removal activity of oxidation layers of Si (column 4, lines 32-45).

Concerning claim 7, Ross teaches silver fluoride is preferred but other such as lithium fluoride, cesium fluoride, Teflon, ammonium fluoride (NH_4F) can be also be used (column 4, lines 36-39).

As for claim 8, Ross teaches (column 3, lines 57-61) that copper is normally preferred because it is relatively inexpensive and highly conductive however other conductive metal and/or

alloys or combination thereof may be utilized. Ross also teaches (column 5, lines 66-68) other expensive noble metals such as silver or gold, or any other conductive metal may be utilized.

5. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Bickler (U.S. Patent No. 4,388,346).

Bickler discloses a electroconductive paste comprising a metal powder, fluorocarbon as an etching agent, a binder polymer and an organic solvent. See column 3, lines 8-49.

Concerning claims 4, Bickler discloses (column 3, lines 46-49) etching agent such as polytetrafluoroethylene removes oxide on the surface of the metal.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-3 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross in view of Martin et al. (U.S. Patent No. 4,564,563) and Tsunaga et al. (U.S. patent No. 5,045,236).

Ross teaches (column 4, lines 4-9) the binder is preferably being of a type that may be used in either an oxidizing or a reducing atmosphere and becomes fugitive at a relatively low temperature and the binder disclosed can be an acrylic polymer or polyvinyl alcohol. Ross differs from the claims in that Ross does not teach binder containing thermosetting resin such as epoxy or phenolic resin (claims 9-10), organic solvent comprising polyhydric alcohol such as

glycerin and/or ethylene glycol (claims 11-12) or ink comprising diluent such as butyl carbitol (claims 2-3).

Martin discloses a solderable electrically conductive composition comprising silver metal powder embedded in a binder matrix formed from acrylic, carboxylated vinyl and epoxy. See abstract and column 2, lines 20- 33. Martin discloses (column 2, lines 38-45) the binder is dissolved in an organic solvent such as butyl carbitol (i.e., diethylene glycol butyl ether). Martin discloses (column 3, lines 36-54) during curing the solvent are evaporated and polymerization occurs, leaving hard, solderable, electrically conductive film that retains its adhesion properties and cohesion strength. Tsunaga discloses utilizing binder such as resol type phenolic resin and polyhydric alcohol as an organic solvent in copper conductive composition in order to obtain excellent conductivity and soldability of the cured film. See column 1, lines 54-68 and column 3, lines 35-44. The polyhydric alcohol disclosed can be butyl sellosolve, dibutyl cellosolve, methyl carbitol, ethyl carbitol, butyl carbitol, dibutyl carbitol, butyl cellosolve acetate, etc. See column 3, lines 35-40. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the conductive ink composition of Ross by substituting phenolic resin and /or epoxy resin and polyhydric alcohol as recited in the instant claims as the binder and organic solvent, respectively for the noted improvement taught by Martin and Tsunaga.

Concerning claim 2-3, Martin (column 3, lines 8-9) teaches the solvent is butyl carbitol and the viscosity of the ink can be lowered with the addition of more solvent. Thus it would have been obvious to incorporate a diluent as taught by Martin in the ink composition of Ross

because such incorporation would achieve the predictable result of lowering the viscosity of the ink in and facilitate the deposition of the ink composition in the substrate.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NGOCLAN T. MAI whose telephone number is (571)272-1246. The examiner can normally be reached on 8:30-5:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art Unit
1793

n.m.